



# Australian Bureau of Statistics

## **1350.0 - Australian Economic Indicators, Dec 2000**

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### **Special Article - Updating the experimental composite leading indicator of the Australian business cycle: September Qtr 2000**

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#### **BACKGROUND**

The ABS Experimental Composite Leading Indicator (XCLI) is a single time series designed to provide early signals of turning points in the Australian business cycle. It does not predict the level of GDP or signal recessions or recoveries. Past performance of the XCLI shows it led turning points in the business cycle by between one and six quarters, with the average being around two quarters.

The XCLI has been developed to supplement rather than to compete with existing forms of economic analysis and forecasting. It is published each quarter in Australian Economic Indicators (in the March, June, September and December issues).

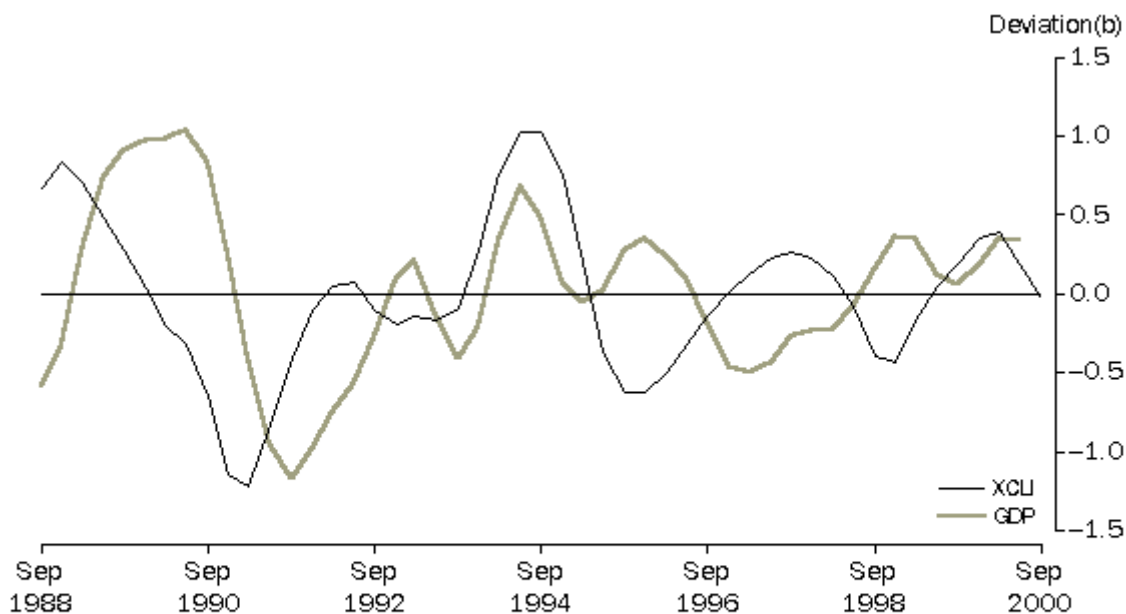
#### **MOST RECENT MOVEMENTS**

The XCLI continued to decline in the September quarter 2000 (down 0.23) to below zero (-0.03) for the first time since the March quarter 1999. There was a provisional peak in the XCLI in the March quarter 2000 which, based on historical performance, indicates that the GDP business cycle could be expected to peak two quarters later. However, the latest data show a provisional peak in the GDP business cycle also in the March quarter 2000, although this may be revised with future releases of GDP data.

In the September quarter 2000, the largest negative contribution to the change in the XCLI came from the housing finance component (-0.15) while the largest positive contribution came from the job vacancies component (0.04) (see table 2).

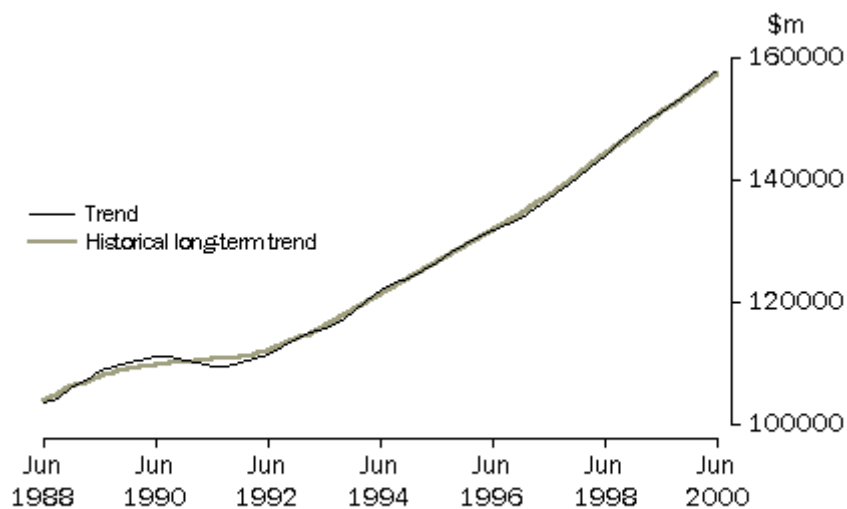
#### **1. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND ITS TARGET THE BUSINESS CYCLE IN GDP**

**Chain volume measure (reference year 1998-99)(a)**



- (a) The historical long-term trend growth rate of GDP is 1.03% in the June quarter 2000 and the trend growth rate is 1.01%.
- (b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless. (see Endnote).

## 2. GDP, Chain volume measure (reference year 1998-99)



Sources: ABS (Cat. no. 5206.0), Quarterly data

**Table 1: XCLI and GDP Chain volume measure (reference year 1998-99)**

	Jun 1999	Sep 1999	Dec 1999	Mar 2000	Jun 2000	Sep 2000
<b>Level</b>						
XCLI	0.05	0.19	0.36	0.39	0.2	-0.03
GDP Trend (\$m)	151,179	152,703	154,540	156,374	157,959	n.a.
GDP Long-term trend (\$m)	150,976	152,619	154,244	155,818	157,416	n.a.
GDP Business cycle	0.13	0.06	0.19	0.36	0.34	n.a.
<b>Movement from previous quarter</b>						
XCLI (change)	0.21	0.13	0.17	0.03	-0.19	-0.23
GDP Trend (% change)	0.9	1.01	1.2	1.19	1.01	n.a.
GDP Long-term trend (% change)	1.12	1.09	1.06	1.02	1.03	n.a.

GDP Business cycle (change)	-0.22	-0.08	0.14	0.16	-0.01	n.a.
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**Table 2: Contributions to quarterly changes in the XCLI**

	Jun 1999	Sep 1999	Dec 1999	Mar 2000	Jun 2000	Sep 2000
Trade factor	0.07	0.04	0.03	0.04	0.03	0.03
United States GDP	-0.03	0.03	0.09	0.08	0.05	0.00
Housing finance commitments	0.07	0.06	0.01	-0.09	-0.14	-0.15
Job vacancies	0.02	0.05	0.06	0.03	0.04	0.04
All industrials index	-0.02	-0.12	-0.04	0.05	-0.01	0.01
Real interest rate(Inverse lagged four quarters)	0.02	0.02	-0.03	-0.04	-0.05	-0.06
Production Expectations (lagged one quarter)	-0.02	0.01	0.05	0.02	-0.04	-0.04
Business expectations (lagged one quarter)	0.10	0.04	0.00	-0.05	-0.07	-0.06
Total XCLI, change from previous quarter	0.21	0.13	0.17	0.03	-0.19	-0.23

In the June quarter 2000, GDP trend rose 1.01%. Meanwhile the historical long-term trend rose by 1.03% in the same quarter, following twenty eight quarters of consecutive quarterly growth above 1%, the longest run above 1% since September quarter 1972.

## OTHER DEVELOPMENTS

The XCLI recorded a trough in the December quarter 1998. This signalled that a trough in the GDP business cycle could be expected to emerge two quarters later, in the June quarter 1999. However, the actual timing of peaks and troughs cannot be identified with certainty until several quarters later. Current data indicate that a trough in the GDP business cycle emerged in the September quarter 1999, three quarters after the trough in the XCLI.

## THE REFERENCE SERIES, GDP

The reference or target series for the XCLI is the GDP business cycle in Australia. The business cycle of a series is defined as the deviation between the trend and the historical long-term trend in the series. Graph 1 shows the business cycles in GDP and the XCLI. Graph 2 shows the level of trend GDP compared with its historical long-term trend.

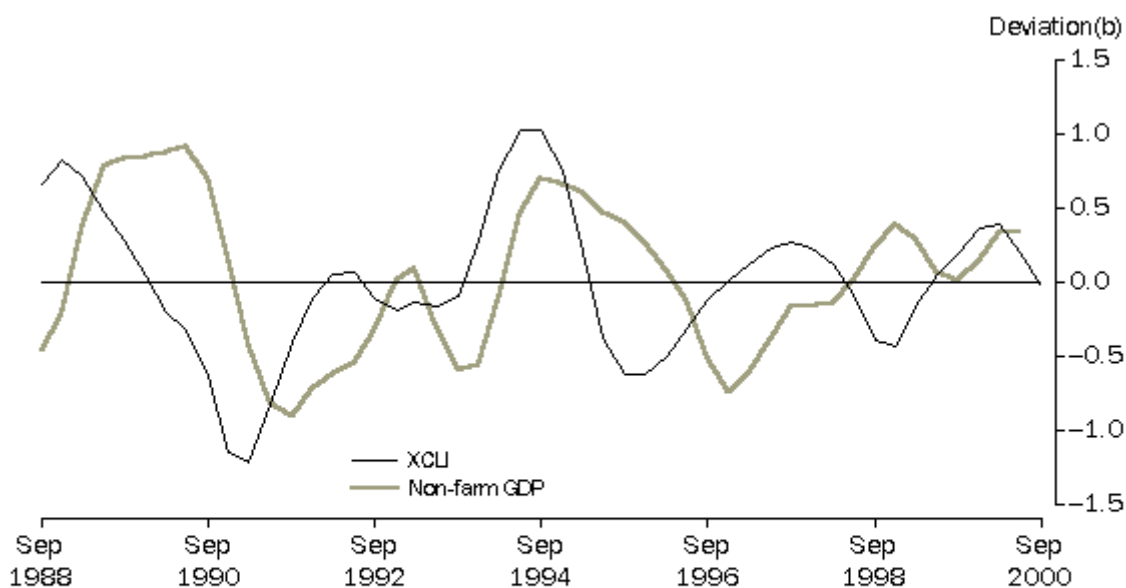
## AN ALTERNATIVE REFERENCE SERIES, NON-FARM GDP

In the December quarter 1995, there was a peak in the business cycle which the XCLI failed to predict. This peak was largely attributable to the effects of a good farm season. The XCLI does not contain an indicator which leads first order farm product effects. In recognition of this, Graph 3 presents an alternative target series, namely, the business cycle of non-farm GDP, chain volume measure.

The peak in the XCLI in the September quarter 1997 is reflected five quarters later as a peak in the non-farm business cycle in the December quarter 1998. In the September quarter 1999, the non-farm business cycle recorded a trough. The XCLI, which recorded a trough in the December quarter 1998, led this turning point by 3 quarters.

## 3. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND THE BUSINESS CYCLE IN NON-FARM GDP

## Chain volume measure (reference year 1998-99)(a)



(a) The trend and the historical long-term trend growth rates of non-farm GDP are both 1.01% in the June quarter 2000.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless (see Endnote).

## ANALYSIS OF COMPONENT INDICATORS

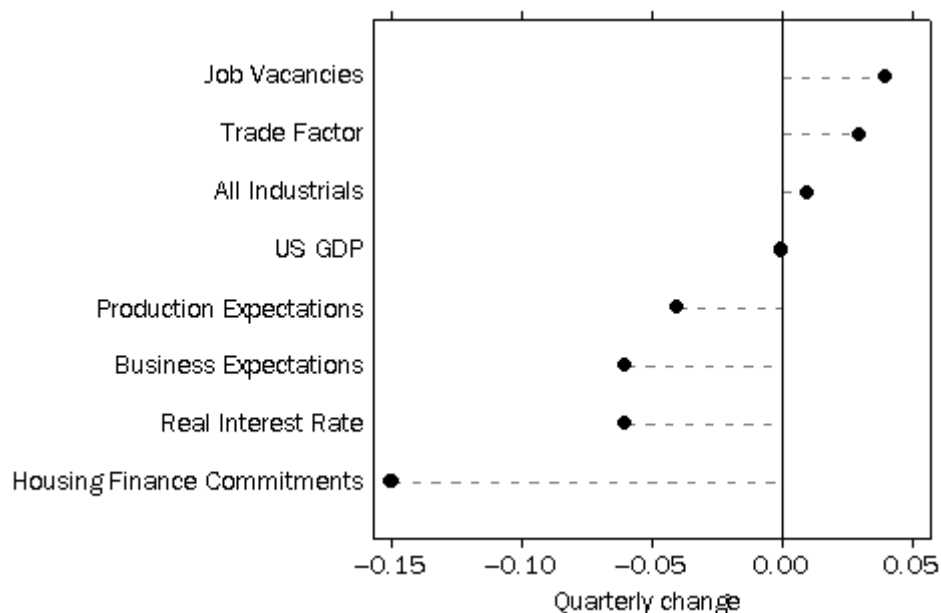
The XCLI summarises the business cycles present in a selection of economic indicators which had typically shown turning points ahead of the business cycle in GDP from the early 1970s to the early 1990s. Because the evolution of each expansion and contraction in activity presents a unique combination of features, none of the individual component indicators has had an unvarying or perfectly stable leading relationship with GDP. However, when combined to form the XCLI their performance as a group is more stable.

In the September quarter 2000, four of the eight components made positive contributions to the quarterly change in the XCLI (one of which was very small) and four components made negative contributions (Table 2 and graph 4). Graphs 5 to 12 show each component's trend and historical long-term trend.

**Positive contributions.** The components making positive contributions to the quarterly change in the September quarter 2000 XCLI were job vacancies (0.04, Graph 8), the trade factor (0.03, Graph 5) and the All Industrials Index (0.01, Graph 9), while the United States GDP contribution was negligible (0.00, Graph 6).

**Negative contributions.** The components making negative contributions to the quarterly change in the September quarter 2000 XCLI were housing finance commitments (-0.15, Graph 7), the real interest rate factor (-0.06, Graph 10), business expectations (-0.06, Graph 12) and production expectations (-0.04, Graph 11).

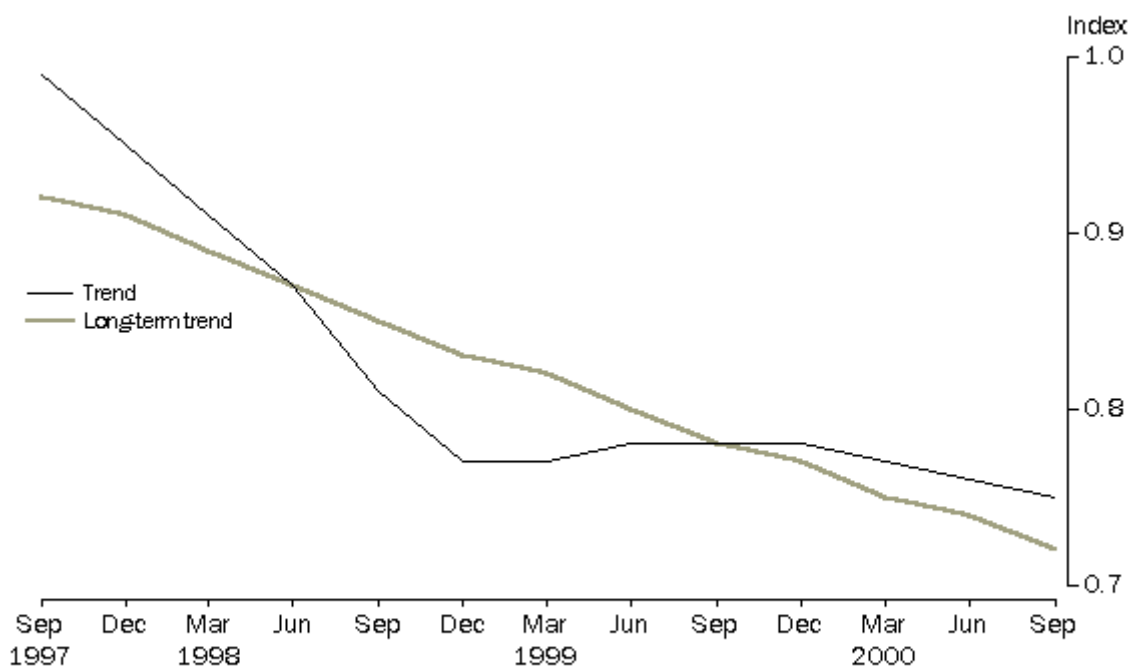
## 4. CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI



## Trade Factor

The trade factor is defined as the ratio between commodity prices in terms of Special Drawing Rights and the price index for imported materials used by Australian producers. This ratio gives an early indication of changes in the terms of trade. In the September quarter 2000, the trade factor continued to decline for the third consecutive quarter. The historical long-term trend of the trade factor declined more rapidly than its trend in the September quarter 2000. Consequently, the trade factor component made a positive contribution (0.03) to the change in the XCLI in the June quarter 2000.

## 5. TRADE FACTOR

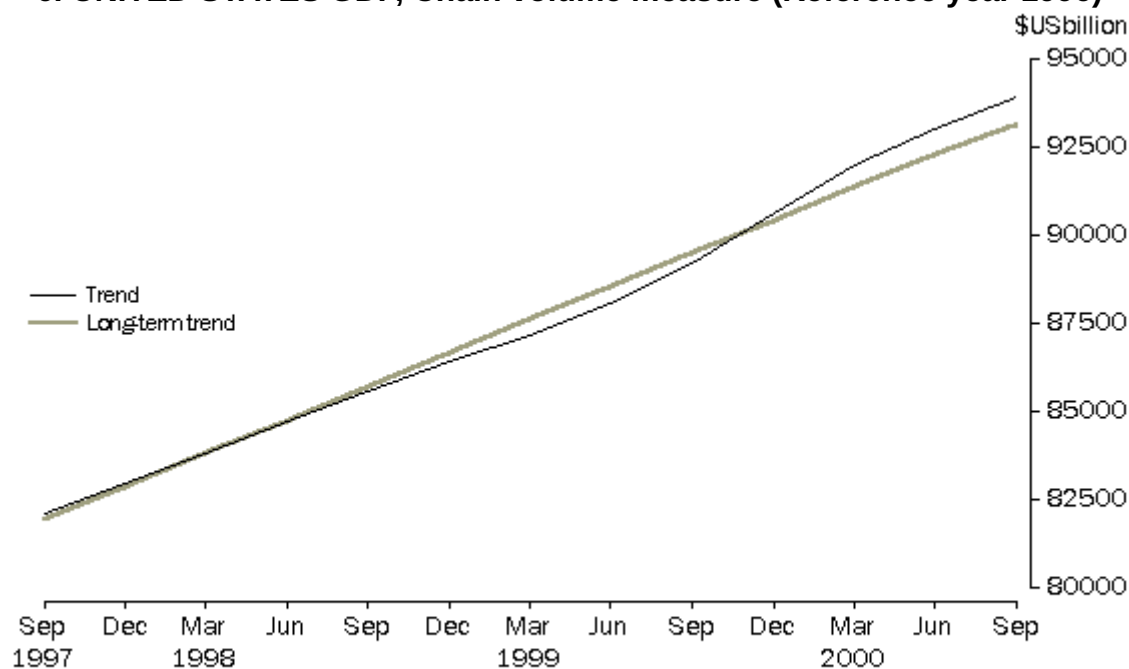


Source: ABS (Cat. no. 6411.0) and RBA Bulletin.

## United States GDP

The trend of United States GDP continued to rise in the September quarter 2000 although the rate of growth has slowed since the December quarter 1999. The US GDP trend grew slightly slower than its historical long-term trend. The US GDP component made a negligible contribution to the change in the XCLI in the September quarter 2000.

## 6. UNITED STATES GDP, Chain volume measure (Reference year 1996)



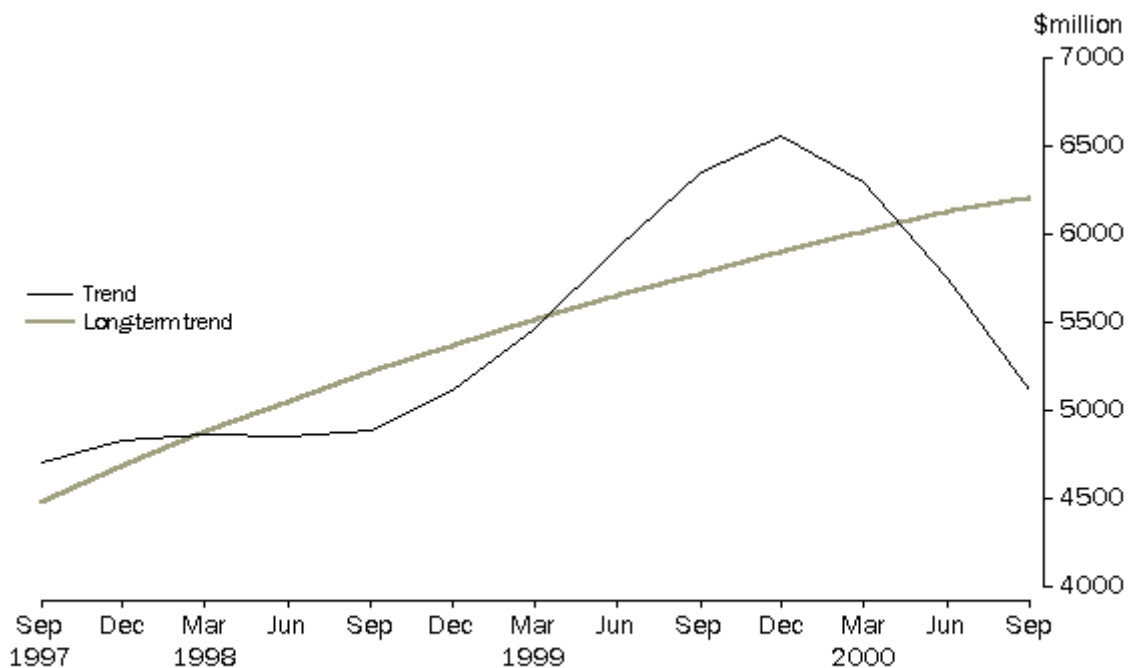
Source: US Bureau of Economic Analysis.

## Secured housing finance commitments

The trend of the secured housing finance commitments component continued to decline at an accelerating rate in the September quarter 2000. A large decline in recent months following a peak towards the end of 1999 was mirrored in related series, including dwelling approvals and construction activity. There appears to have been a change in demand patterns brought about by the “bringing forward” of building activity prior to the introduction of the GST on 1 July 2000. In contrast, the historical long-term trend for secured housing finance commitments continued to rise in the September quarter 2000.

The secured housing finance commitments component made a negative contribution (-0.15) to the change in the XCLI in the September quarter 2000, the largest negative contribution to the change in the XCLI of all its components.

## 7. SECURED HOUSING FINANCE COMMITMENTS



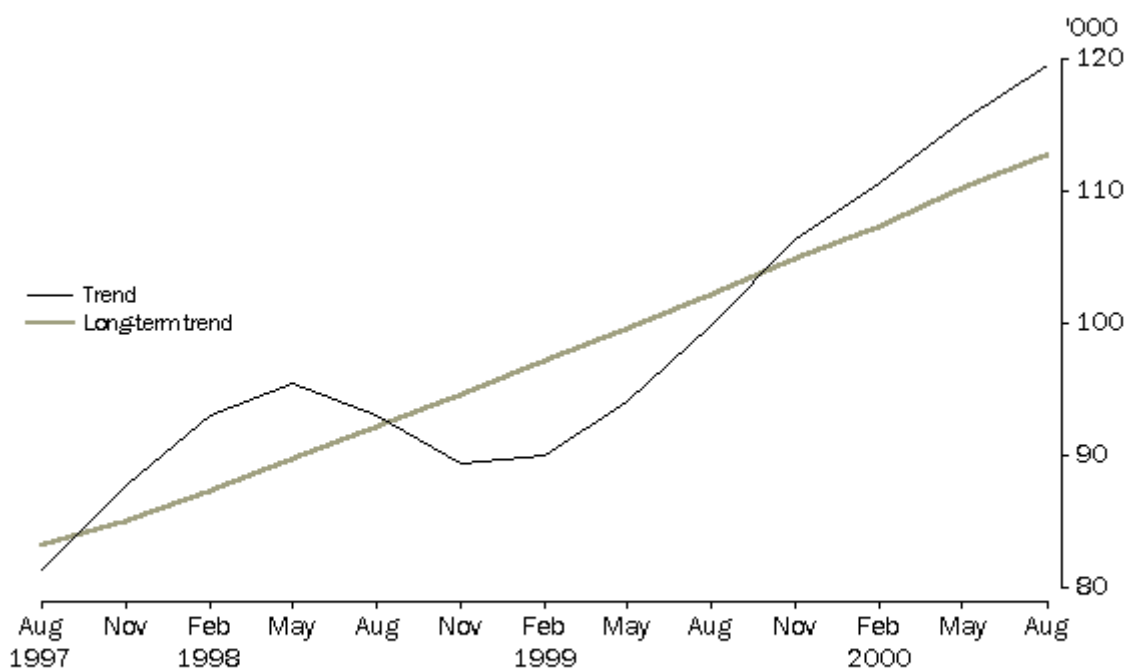
Source: ABS (Cat no. 5671.0).

## Job vacancies

**Note that the job vacancies series are referenced to the middle month of a quarter.**

The trend in the number of job vacancies continued to rise strongly in August 2000 although at a slower rate than the past few quarters. In contrast, the historical long-term trend has been rising at a steady rate (around 2.5% a quarter) over the last 12 quarters. Job vacancies made a positive contribution (0.04) to the change in the XCLI in the September quarter 2000, the largest positive contribution of all the components of the XCLI.

## 8. JOB VACANCIES

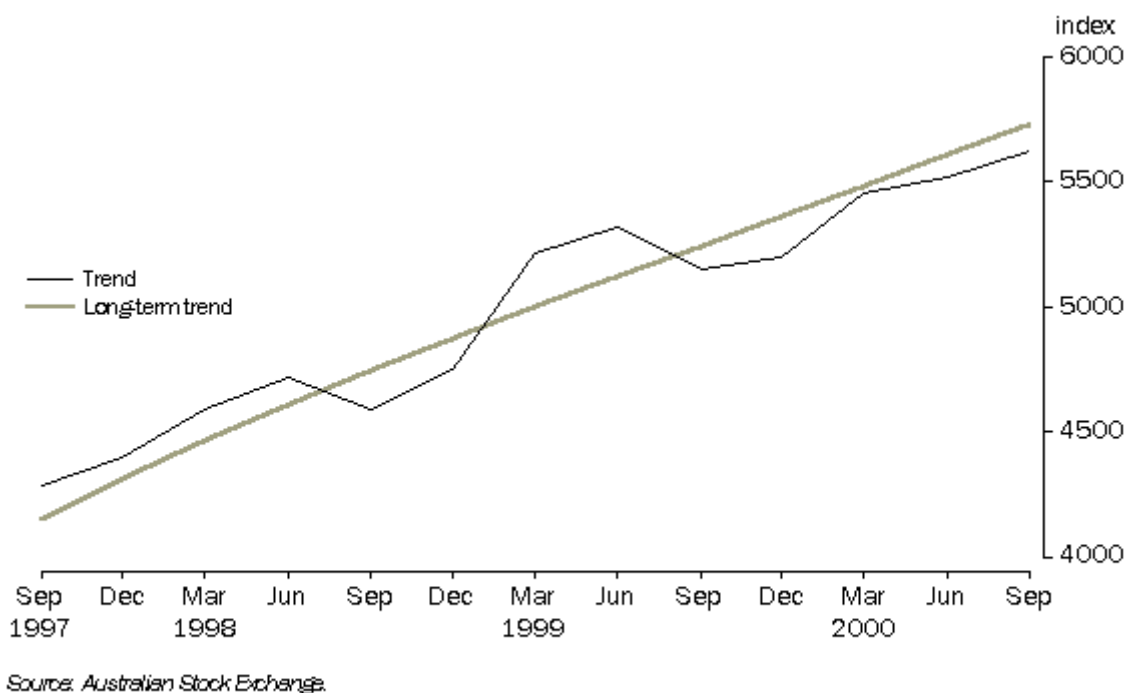


Source: ABS (Cat no. 6354.0).

## All Industrials index

The growth rate of the trend of the All Industrials index continued to rise in the September quarter 2000. In the current quarter, its historical long-term trend growth rate declined. As a result, the All Industrials index component made a positive contribution to the change in the XCLI in the current quarter (0.01).

### 9. ALL INDUSTRIALS INDEX



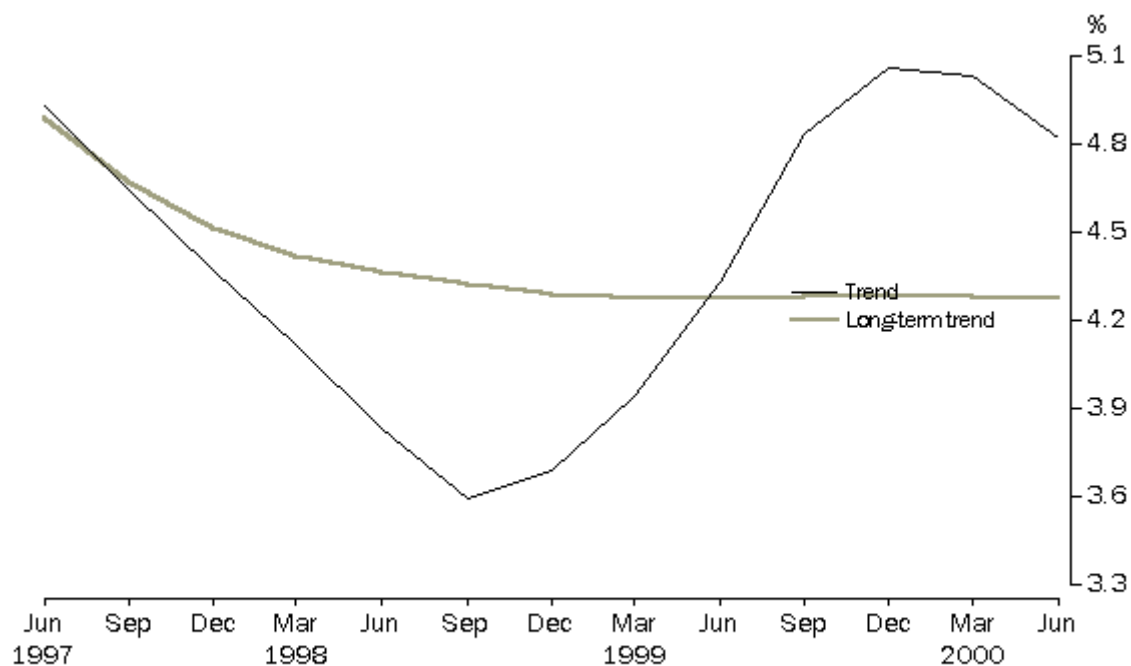
## Real interest rate

The XCLI uses the inverse of the difference between the trend and the historical long-term trend of the real interest rate, lagged four quarters. Therefore, it is the September quarter 1999 movement of the real interest rate that contributes to the September quarter 2000 movement in the XCLI. The real interest rate component (once inverted) made a negative contribution to the change in the XCLI (-0.06) in the September quarter 2000. This was the second largest negative contribution to the XCLI.

In the last issue of the XCLI, the trend of the real interest rate continued to rise in the March quarter 2000. The real interest rate trend began to decline in the March quarter 2000 and continued to fall in the June quarter 2000 although this was not apparent in the previous issue of the XCLI. Over the past two quarters the historical long-term trend of the real interest rate has been declining at a slower rate than the trend. The implication of this relationship is that real interest rates are likely to begin to make positive contributions to the change in the XCLI in the first half of 2001.

### 10. REAL INTEREST RATE





Source: ABS (Cat no. 5206.0) and Treasury.

## Production and business expectations

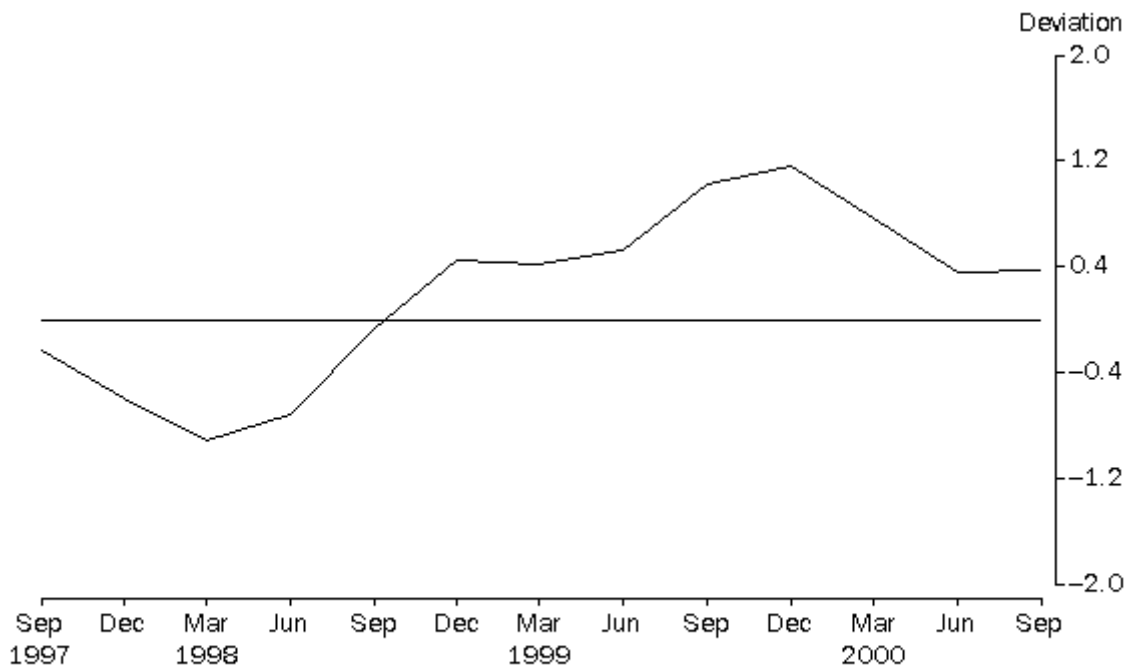
**Note:** These components are lagged one quarter in the compilation of the XCLI. Like other XCLI components, the production expectations and business expectations series have been smoothed and standardised to display cyclical behaviour. However, these series are not considered to exhibit long-term trend growth.

In the September quarter 2000, the trend of the production expectations recovered. As a result of the decline in the trend in the June quarter 2000, this component made a negative contribution (-0.04) to the change in the XCLI in the September quarter 2000 due to lagging.

In the September quarter 2000, the trend of the business expectations continued to decline, although at a decelerating rate. According to the September quarter 2000 Survey of Industrial Trends (by the ACCI and Westpac Banking Corporation), the decline in the trend of the business confidence indicator eased in original terms in the current quarter from the sharp decline in the June quarter 2000. This component made a negative contribution to the change in the XCLI in the June quarter 2000.

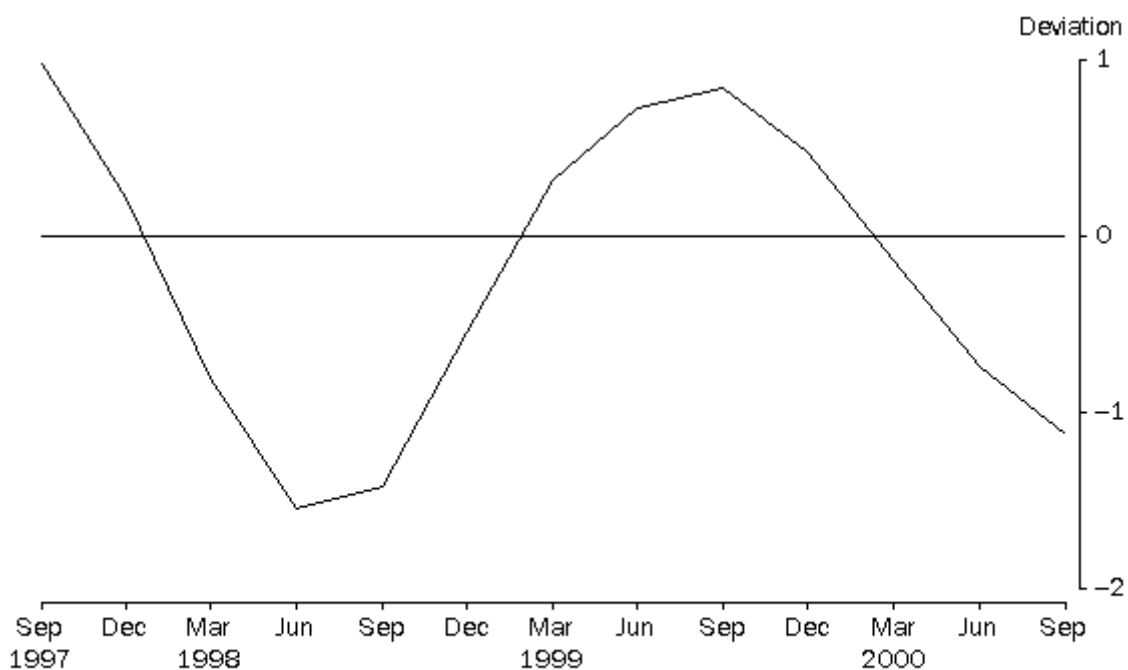
**Note:** The source of these expectations series is the Australian Chamber of Commerce and Industry, and Westpac Banking Corporation, Survey of Industrial Trends. The ABS also compiles business expectations data. However, the ABS data cannot yet be included as a component of the XCLI due to the insufficient length of the time series.

## 11. PRODUCTION EXPECTATIONS, Trend



Source: AOC and Westpac Banking Corporation, 'Survey of Industrial Trends'.

## 12. BUSINESS EXPECTATIONS, Trend



Source: AOC and Westpac Banking Corporation, 'Survey of Industrial Trends'.

## LONGER TIME SERIES AND FURTHER DETAILS

Details of the compilation of the XCLI index can be found in An Experimental Composite Leading Indicator of Australian Economic Activity, (1347.0), June 1993, and in the feature articles published in Australian Economic Indicators (1350.0) in August and October 1992 and May 1993.

Longer time series of the data presented in this XCLI article are now available on PC AUSSTATS. For further information about these statistics, contact Costa Pappas (02) 6252 6161.

## **ENDNOTE**

The unit of measurement varies between XCLI components. For example, the real interest rate is measured as a percentage, job vacancies as a number, United States GDP in dollar terms and the trade factor is measured in index number form. Each component is therefore standardised to make their contributions to the XCLI comparable.

The standardisation procedure gives each XCLI component an average value of 1. The variation of each component about its average is also standardised, so that the average deviation also equals 1. Chain volume GDP (the reference series) is also standardised in the same way.

Graphs 1 and 3 use the standardised forms of the XCLI, GDP and non-farm GDP series. The graphs show the deviation of the standardised series from their respective historical long-term trends. Because of the standardisation procedure, the deviation measure has no particular unit (i.e. it is not measured in dollars, or percentage change, or any other real world unit).

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